Two new species of Sesiini from the Oriental Region (Lepidoptera: Sesiidae, Sesiinae)

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Abstract: In the present paper two Oriental Sesiini genera, *Cyanosesia* Gorbunov & Arita, 1995 and *Sphecosesia* Hampson, 1910, are briefly reviewed. *Cyanosesia* ***borneensis*** **sp. n.** (holotype ♂ in Bishop Museum, Honolulu, Hawaii, U.S.A.) is described from northern Borneo. Furthermore, *Synanthedon hypochalcia* Hampson, 1919 is transferred to *Cyanosesia* (**comb. n.**), and *Cyanosesia tonkinensis* Gorbunov & Arita, 1995 is reported from China for the first time. The type species of the genus *Sphecosesia*, *Sphecosesia pedunculata* Hampson, 1910, was examined and the genus is redefined here. *Sphecosesia* ***bruneiensis*** **sp. n.** (holotype ♂ in BMNH, London, U.K.) is described from Brunei, and *Glossosphecia micans* Diakonoff, 1968 as well as *Sesia rubripes* Pagenstecher, 1900 are transferred to *Sphecosesia* (**comb. n.**).

Zwei neue Sesiini-Arten aus der orientalischen Region (Lepidoptera: Sesiidae, Sesiinae)

Zusammenfassung: In der vorliegenden Arbeit wird eine Übersicht über die beiden in der orientalischen Region verbreiteten Gattungen *Cyanosesia* Gorbunov & Arita, 1995 und *Sphecosesia* Hampson, 1910 der Tribus Sesiini gegeben. *Cyanosesia* ***borneensis*** **sp. n.** wird aus Nordborneo beschrieben. Außerdem wird *Synanthedon hypochalcia* Hampson, 1919 zur Gattung *Cyanosesia* (**comb. n.**) transferiert, und *Cyanosesia tonkinensis* Gorbunov & Arita, 1995 wird erstmals aus China gemeldet. Die Typenart der Gattung *Sphecosesia*, *Sphecosesia pedunculata* Hampson, 1910, wurde untersucht, und die Gattung wird neu charakterisiert. *Sphecosesia* ***bruneiensis*** **sp. n.** wird aus Brunei beschrieben; *Glossosphecia micans* Diakonoff, 1968 und *Sesia rubripes* Pagenstecher, 1900 werden zu *Sphecosesia* (**comb. n.**) transferiert.

Introduction

In the past decade, the knowledge of the Sesiidae of tropical Asia has increased fundamentally. Especially, the Sesiidae fauna of the southern Asian mainland has been the aim of several studies (e.g., Gorbunov & Arita 1995a–c, 1996, 1997, 2000, Arita & Gorbunov 2000a–c, and Kallies & Arita 2001). However, the Sesiidae of the Malesian region comprising the South East Asian islands from Sumatra to Sulawesi are only insufficiently known. Even the general distribution of Sesiidae genera in this region is widely unknown. Only a few publications related to the clearwing moths fauna of this huge area were published recently (Gorbunov & Kallies 1998, Kallies & Arita 1998, Kallies & Garrevoet 2001, Kallies 2002). The present paper is another contribution to the knowledge of distribution and diversity of Malesian Sesiidae.

General abbreviations

ATA Anterior Transparent Area of forewing.
ETA External Transparent Area of forewing.
PTA Posterior Transparent Area of forewing.

Abbreviations of collections

BMHU Bishop Museum, Honolulu, Hawaii, U.S.A.
BMNH The Natural History Museum (formerly British Museum (Natural History)), London, Great Britain.
MNHU Museum für Naturkunde der Humboldt-Universität, Berlin, Germany.

Cyanosesia Gorbunov & Arita, 1995

Cyanosesia Gorbunov & Arita (1995c: 74–77); type species *Cyanosesia tonkinensis* Gorbunov & Arita, 1995 by original designation.

This genus has been described based on two species from Vietnam (Gorbunov & Arita 1995c) and was further characterised later (Gorbunov & Kallies 1998, Kallies & Arita 1998). Here, founded on external characters and venation, another species from India is combined to *Cyanosesia*. Further, a species of this genus from Borneo is described as new to science. Finally, *Cyanosesia tonkinensis* Gorbunov & Arita, 1995 is recorded from China for the first time. This extends the known distribution range of the genus from north-eastern India and China in the West to Borneo and the Philippines in the East.

Composition of the genus:

- *Cyanosesia tonkinensis* Gorbunov & Arita, 1995 (Vietnam);
- *Cyanosesia vietnamica* Gorbunov & Arita, 1995 (Vietnam, China);
- *Cyanosesia pelocroca* (Diakonoff, 1968) (*Glossosphecia*) (Luzon, Philippines);
- *Cyanosesia meyi* Kallies & Arita, 1998 (Samar, Philippines);
- *Cyanosesia treadawayi* Kallies & Arita, 1998 (Leyte, Philippines);
- *Cyanosesia javana* Gorbunov & Kallies, 1998 (Java, Indonesia);
- *Cyanosesia philippina* Gorbunov & Kallies, 1998 (Mindanao, Philippines);
- *Cyanosesia hypochalcia* (Hampson, 1919) comb. n. (*Synanthedon*) (Khasis, India);
- *Cyanosesia borneensis* sp. n. (Borneo, Malaysia).

Cyanosesia ***borneensis*** **sp. n.** (Figs. 1, 3)

Holotype: ♂ (Fig. 1), North Borneo (SE) [Malaysia, Sabah] / Forest Camp, 19 km / N of Kalabakan / 1. xi. 1962; K. J. Kuncheria / Collector / Bishop (in BMHU).

Etymology. The new species' name derives from the island of Borneo where the type specimen was collected.

Description. Alar expanse 19.0 mm, forewing length 8.5 mm, body length 11.0 mm, antenna 5.0 mm.

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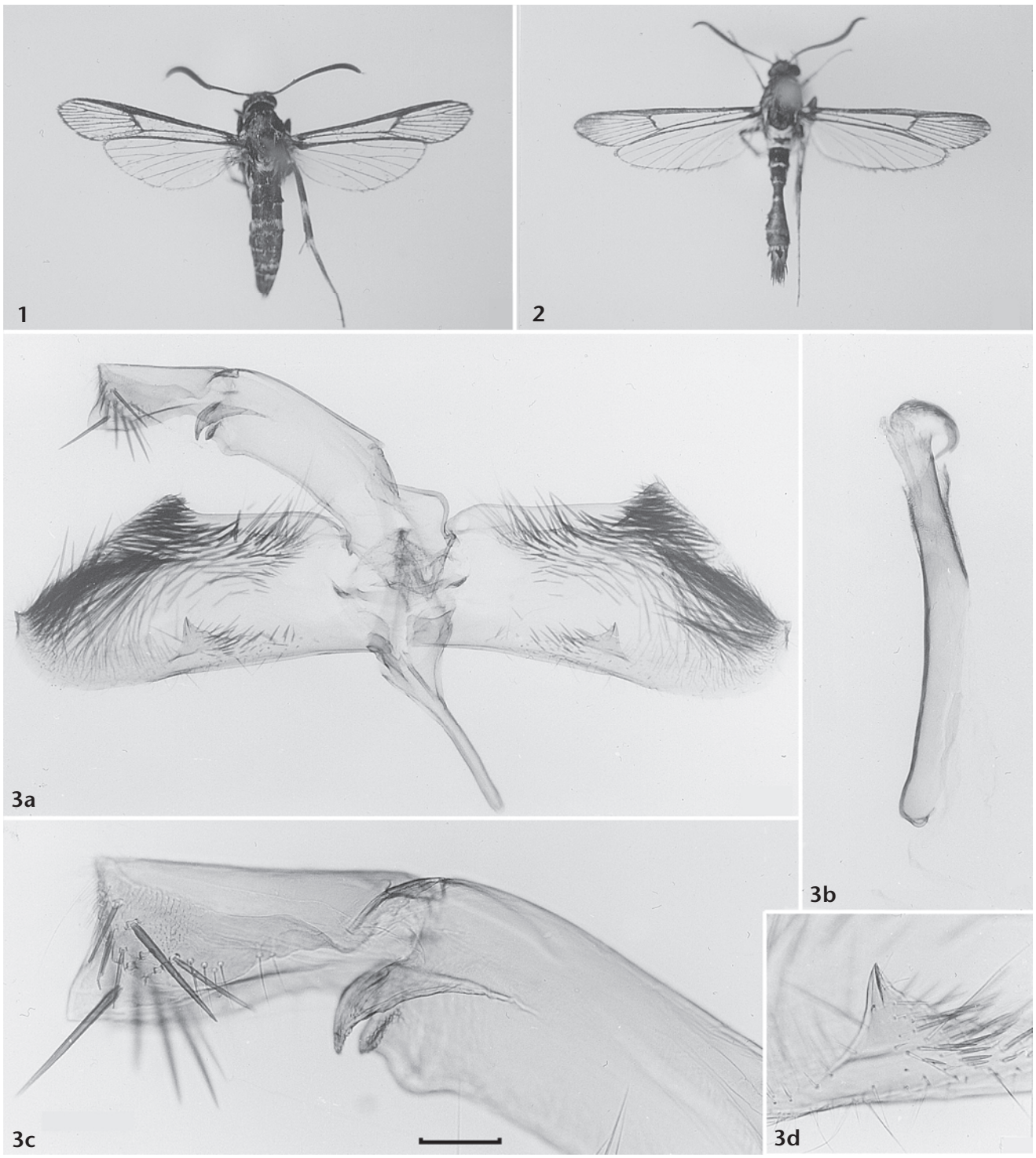

Plate 1: Fig. 1: *Cyanosesia borneensis* sp. n., holotypus, ♂, Borneo (BMHU). **Fig. 2:** *Sphecosesia bruneiensis* sp. n., holotypus, ♂, Borneo (BMNH). **Fig. 3:** *Cyanosesia borneensis* sp. n., ♂ genitalia. **a.** ventral view, aedeagus removed. **b.** aedeagus. **c.** distal portion of uncus-tegumen-complex. **d.** crista sacculi of right valva. — Scale bars: 0.3 mm (3a–b); 0.1 mm (3c–d).

Plate 2: Fig. 4: *Sphecosesia pedunculata* HAMPSON, 1910, ♂ genitalia, Sikkim (MNHU). **a.** genitalia, ventral view, aedeagus removed. **b.** aedeagus. **Fig. 5:** *Sphecosesia bruneiensis* sp. n., ♂ genitalia. **a.** uncus-tegumen-complex. **b.** right valva. **c.** aedeagus. **d.** apex of aedeagus. **e.** saccus. **f.** juxta. — Scale bars: 0.3 mm (4, 5a–c); 0.1 mm (5d–f).

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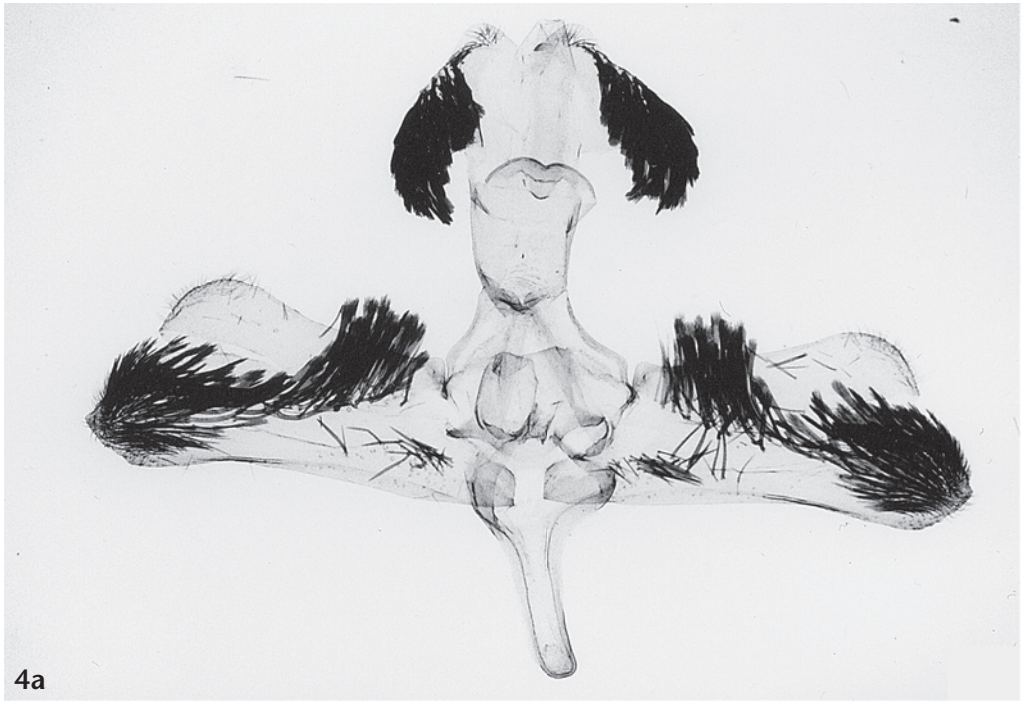
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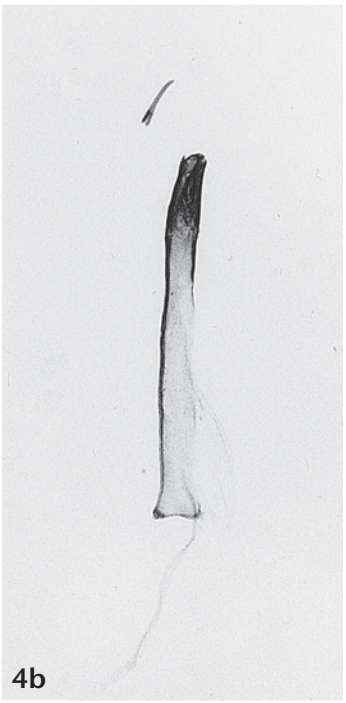
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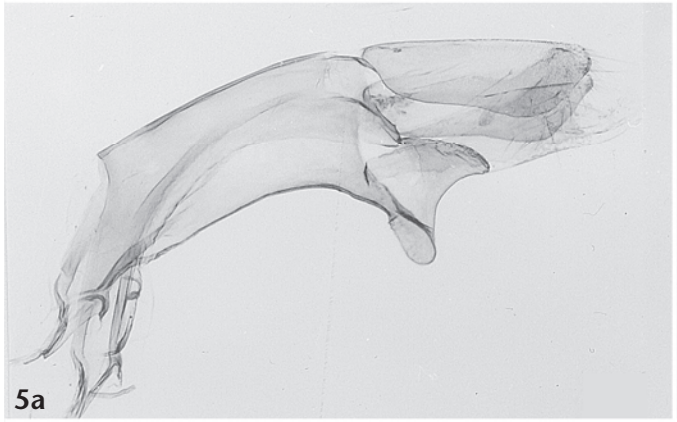
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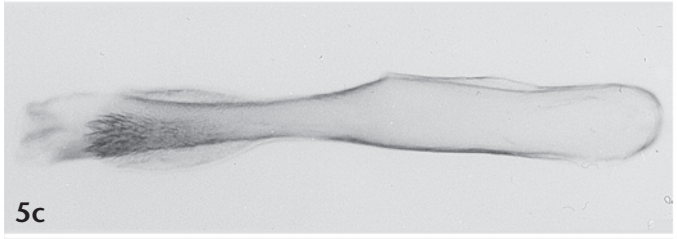
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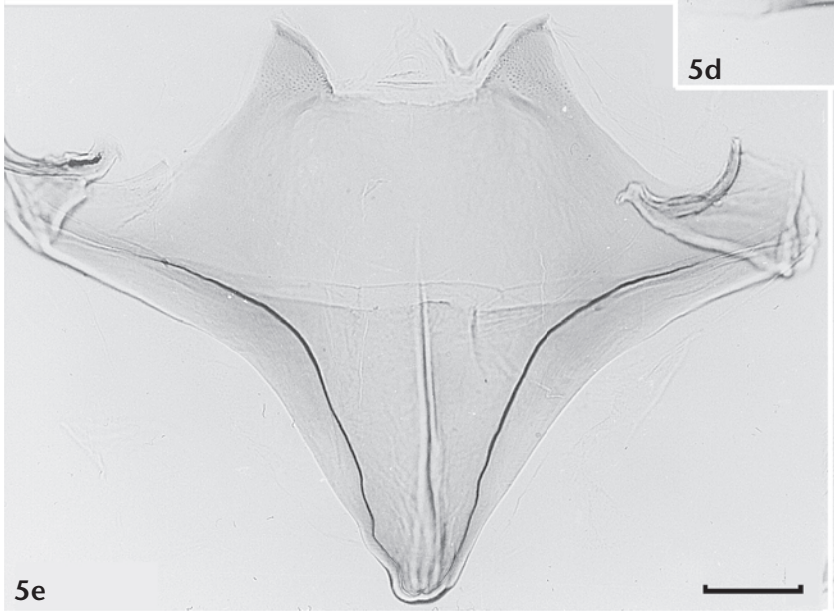
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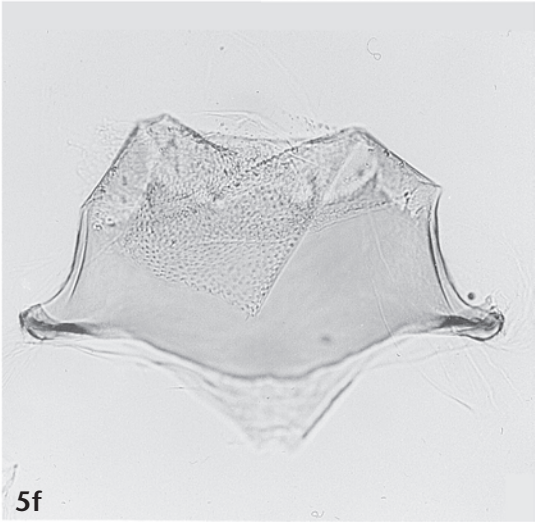
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Head: vertex fuscous; frons ochre-brown, darker in middle part; antenna fuscous, short ciliate; labial palps yellow, mixed with black scales dorsally, basal joint short scaled, blackish ventrally, middle and apical joint short scaled, yellow ventrally; pericephalic scales yellow; patagia black, laterally with a yellow spot. Thorax: fuscous; yellow spotted laterally; tegula with a yellow spot at the forewing base; metathorax with yellow hairs dorsally and with a yellow posterior margin ventrally. Legs: fore coxa yellow, apically blackish, remaining parts fuscous, mixed with yellow scales; mid and hind femur fuscous, yellow-mixed, mainly yellow in distal portion; hind and mid tibia fuscous, yellow in middle and apical part; mid and hind tarsus fuscous exteriorly, dirty-yellow interiorly. Forewing: transparent; with yellow spot at base; veins brownish; discal spot narrow, straight, brownish, with some orange scales; outer margin narrow, with narrow projections extending into each cell of the ETA. Hindwing: transparent; discal spot not developed; outer margin narrow; fringes very short, brownish. Abdomen: tergites fuscous-grey, tergite 1 with a large yellow spot laterally, medially some yellow scales; tergite 2 with some yellow scales anteriorly; tergite 3 with a narrow yellow anterior stripe; tergite 4 yellow in anterior half and laterally; tergites 5–7 with narrow yellow posterior stripes; tergite 5 additionally with few yellow scales anteriorly; anal tuft fuscous-grey, evenly mixed with yellow scales; sternites similar to tergites.

♂ genitalia (Gen. prep. AK111, Fig. 3). Valva trapezoid, covered with simple setae in dorsal and distal portion; apically and at dorsal margin pointed; crista sacculi well-developed, triangular; uncus with several strong, pointed setae; gnathos asymmetric, consisting of two pointed hooks; aedeagus straight, apically with several short and three long, strongly bent long teeth; saccus long and narrow.

Diagnosis. *C. borneensis* is similar and closely related to *C. javana* and *C. hypochalcia*. *C. javana* differs by the size (alar expanse ca. 25 mm), by the shape of the forewing (broader, ATA wider), the color of tergite 4 (with a narrow yellow stripe only), and the structure of the ♂ genitalia (saccus shorter, crista sacculi broader, apical teeth of aedeagus shorter). *C. hypochalcia* can be separated by the color of the abdomen (dark red-brown, tinged with grey; tergites 5, 6, and 7 without yellow margins). All other known species differ clearly by the structure of the wings and the genitalia.

Bionomics and Habitat. Mainly unknown; the type specimen was collected in a forest in early November.

Additional material examined. *Cyanosesia tonkinensis*: 1 ♂ "2." "*P. trizonata*" [= China, Shui yuen shan, 18 km ENE of Fongwan, 900 m, mountain forest, 2. VI. 1917, coll. Mell] [probably Guangdong Province, Shaoguang City, Ongyuen County] (Gen. prep. AK187) (cf. Zukowsky 1929: 35, misidentified as *Paranthrene trizonata* Hampson, 1900).

Sphecosesia Hampson, 1910

Sphecosesia Hampson (1910: 93), type species: *Sphecosesia pedunculata* Hampson, 1910 by original designation.

The genus *Sphecosesia* was described on the base of a single species, *Sphecosesia pedunculata* Hampson, 1910, from Sikkim, India. Later, two species were described from the Philippines (Hampson 1919, Diakonoff 1968) and another three have been named from China (Yang & Wang 1989, Xu et al. 1999).

Although the type species of the genus was figured by Gaede (1933), its genitalia have never been examined leaving the genus somewhat ill-defined. Recently, in the collection of the MNHU two ♂♂ of *S. pedunculata* were found which were collected in Sikkim probably in the late 19th century. Both specimens perfectly match the holotype of *S. pedunculata* which is preserved in the BMNH. Moreover, they display the same label data and derive from the same collection, i.e. "Coll. Bingham", as the type specimen so the identity of the specimens appears doubtless. The genitalia of *S. pedunculata* are figured here for the first time, a new species is described from Borneo. The characterisation and definition of the genus *Sphecosesia* is expanded. Based on the venation and external characters another two species from the Philippines and Papua New Guinea respectively are transferred to *Sphecosesia*, extending the range of the genus from the Oriental into the Australian region.

Description. Antenna clavate, ciliate; proboscis developed. Wings relatively long and narrow; ATA, PTA, and ETA of forewing well-developed, apical area reduced to narrow projections into each cell of ETA; discal spot of forewing narrow, pointing into ATA or with a conspicuous narrow projection into ATA; veins R4 and R5 long stalked. In hindwing vein M2 arising from upper quarter of crossvein, M3 and Cu1 arising from one point or short stalked (cf. Xu et al. 1999). Forewing in ♀♀ sometimes dusted with brownish semitransparent scales. Abdomen with proximal segments moderately to strongly narrowed. In ♂ genitalia valva with broad scale-like multifurcate setae on the inner surface, other species with simple apically pointed setae; crista sacculi not developed; gnathos distally with a simple edge or somewhat extended into two separate hooks; uncus laterally covered with broad scale-like or simple setae; aedeagus simple or with subapical processes; saccus short triangular or finger-shaped. In ♀ genitalia ductus bursae long and narrow; antrum with a narrow ring-shaped sclerotization; ostium small; corpus bursae large, simple ovoid, with a signum close to the ductus; abdominal segments 8 and 9 relatively short and small (cf. figs 4, 5 and Diakonoff 1968, Yang & Wang 1989, Xu et al. 1999).

Diagnosis. The genus is related to *Cyanosesia* Gorbunov & Arita, 1995 (type species *Cyanosesia tonkinensis* Gorbunov & Arita, 1995) and *Scasiba* Matsumura, 1931 (type species *Scasiba taikanensis* Matsumura, 1931). From both, *Sphecosesia* can be distinguished by the narrowed basal abdominal segments and by the absence of a crista

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sacculi of the valva which is present and well-developed in both related genera (cf. Arita 1991, Gorbunov & Arita 1995c). From *Cyanosesia* it additionally differs in ♂ genitalia by the absence of strongly sclerotized spines on the apex of the aedeagus, by the shape of the valva (triangular, with a pointed hook at dorsal margin in *Cyanosesia*; with a curved dorsal margin in *Sphecosesia*) and by the structure of the setae (strong at uncus, never scale-like in *Cyanosesia*; weak at uncus, sometimes scale-like in *Sphecosesia*). Furthermore, both genera can be separated easily by the ♀ genitalia (ductus bursae short and broad, ostium wide, abdominal segments 8 and 9 relatively long and strong in *Cyanosesia*).

Remark. In the present view, two groups of species can be recognised within the genus *Sphecosesia*. In the first group of species, including the type species of the genus and the species described here, the valvae of the ♂ genitalia display broad scale-like multifurcate setae on the inner surface. In the second group, there are species with simple apically pointed setae on the valva. Whether both groups indeed belong to only a single genus, i.e. *Sphecosesia*, or should be separated into two genera should be clarified on the base of additional material and a broader knowledge of the Oriental Sesiini.

Bionomics. Lychee (*Litchi chinensis* Sonn.) and Longan (*Dimocarpus longan* Lour.), both of the family Sapindaceae, have been reported as hostplants of *Sphecosesia litchivora* Yang & Wang, 1989 from Hainan, China (Yang & Wang 1989).

Composition of the genus:

- *Sphecosesia pedunculata* Hampson, 1910 (Sikkim, India);
- *Sphecosesia aterea* Hampson, 1919 (Mindanao, Philippines);
- *Sphecosesia melanostoma* Diakonoff, 1968 (Luzon, Philippines);
- *Sphecosesia litchivora* Yang & Wang, 1989 (Hainan, China);
- *Sphecosesia nonggangensis* Yang & Wang, 1989 (Guangxi, China);
- *Sphecosesia lushanensis* Xu & Liu, 1999 (Jiangxi, China);
- *Sphecosesia micans* (Diakonoff, 1968) comb. n. (*Glossosphecia*) (Mindanao, Philippines);
- *Sphecosesia rubripes* (Pagenstecher, 1900) comb. n. (*Sesia*) (New Britain, Papua New Guinea);
- *Sphecosesia bruneiensis* sp. n. (Borneo: Brunei).

Sphecosesia bruneiensis sp. n. (Figs 2, 5)

Holotype: ♂ (Fig. 2), "Brunei: 150' / Rampayon R., LP291B / GR 951801. Lowland / dipterocarp forest / 11.–15. iv. 1988" "G. S. Robinson / BM 1988-160" (BMNH).

Etymology. The name of the new species derives from the state of Brunei where the type specimen was collected.

Description. Alar expanse 28.0 mm, forewing length 10.5 mm, body length 14.0 mm, antenna 5.5 mm.

Head: vertex black, metallic shining; basal joint of labial palps with long brushed black-brown scales, middle and apical joint smooth, yellow; antenna long ciliate. Thorax: yellow ventrally; metathorax yellow; tegulae black, yellow distally; patagia black, yellowish mixed laterally; a small yellow spot at base of forewing. Legs: fore coxa and femur yellow; hind leg very long, longer than abdomen, yellow dorsally; hind femur blackish distally. Forewing: transparent almost throughout; apical area marked only by narrow stripes of scales between the veins; discal spot narrow, with a short, small projection into the ATA. Abdomen: tergite 1 with yellow posterior margin, laterally yellow throughout; tergite 2 with a narrow yellow posterior margin; tergites 3–4 with yellow scales at posterior margin; tergites 5–7 and anal tuft brownish black; sternites 1–6 yellow; sternite 7 yellow basally, blackish distally.

♂ genitalia (Gen. prep. AK79, Fig. 5). Valva trapezoid, with multifurcate scale-like setae in dorsal and distal portion, crista sacculi long and narrow, straight, close to the ventral margin of valva; uncus with relatively few, weak and simple setae; gnathos distally extending into two hooks; aedeagus straight, subapically with a group of processes; saccus short triangular.

Diagnosis. *S. pedunculata*, the type species of the genus, differs from *S. bruneiensis* by the presence of broad multifurcate scale-like setae along the uncus margins and additional characters of the ♂ genitalia (cf. figs 4a, 5b). Furthermore, it can be distinguished by the shape of the discal spot of the forewing (with an extremely long and narrow projection into the ATA) and by the shape of the abdomen (basal two segments extremely narrowed). From *S. melanostoma*, *S. litchivora*, and *S. lushanensis*, the new species can be separated readily by the structure of the ♂ genitalia (with simple pointed setae in the species compared). *S. aterea*, *S. micans*, and *S. rubripes* differ from *S. bruneiensis* by the structure of the forewing discal spot (with a long and narrow projection into the ATA in *S. aterea*; with a short projection into the ATA in *S. micans*; angled in *S. rubripes*).

Bionomics and habitat. The single known specimen was taken in a lowland dipterocarp forest (Dipterocarpaceae) in April.

Additional material examined. *Sphecosesia pedunculata*: 2 ♂♂ „Sikhim / coll. Bingham" [India, Sikkim] (MNHU).

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Corrigenda

To: A. Kallies (2002): ***Brachodes flagellatus* sp. n. from Tibet (Lepidoptera: Sesioidea, Brachodidae).** – Nachrichten des Entomologischen Vereins Apollo, Frankfurt am Main, N.F. **23** (3): 159–160.

Caused by a mounting error, the figure numbers 2 and 3 of the colour plate on p. 159 were accidentially interchanged. The picture bottom left should read no. 2, the picture top right is no. 3. We apologize.

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